Short Instructions for Installation of a CD-1.1 Data Provider

1.0 Introduction

This document provides an abbreviated instruction set for building and installing the Continuous Data Subsystem (CDS) public bundle software for supporting the Continuous Data-1.1 (CD-1.1) protocol. Successful completion of these instructions will produce a software subsystem that is capable of establishing a connection, producing data frames containing synthetic data, and sending those frames to a protocol peer, e.g., a data center. See Figure 1 on page 4 for a representation of the resulting subsystem. The reader is referred to the full length documentation accompanying this public bundle [SAI01] for a more thorough explanation of bundle components, configuration, and operation.

2.0 Installation Scripts

A series of programs utilizing scripting languages are provided for accomplishing the installation as described in these instructions. These scripts utilize components typically available on UNIX based operating systems and include, *csh, perl, grep,* and *sed*. The scripts provided are:

- *extract_cd11*
- *build_cd11*
- *install_cd11*
- *create_station*
- *setup_*<name>*_env*
- *configure_dfg*
- *start_cd11*
- *start_dfg*
- *kill_dfg*

The scripts accomplish what is described in detail in the full length documentation. These are not graphical user interface scripts, but rather an ASCII question and answer type interface. Scripts request information from the user via text prompts and accept input via the keyboard. The scripts are intended to be executed in the order in which they are presented below. At the conclusion of each script the program will ask if the user would like to proceed to the next script in the succession. If an affirmative response is received, the next script will be executed.

3.0 Preparation

In order to complete these instructions the user will need several pieces of information. They are:

- The name of the compressed public bundle tar file (e.g., cds_bundle_1.2tar.gz),
- The directory path in which the source code is to be installed/kept,
- The directory path to the execution environment (this may be the same as the source code directory root at the installer's discretion),
- Information about the data provider and its sensors (e.g., provider name, number of sensors, their names and channels; see Appendix in [SAI01] for additional information),
- The domain name of the protocol peer (e.g., the data center) where data are to be sent.

4.0 Extract

Extracting the public bundle will place the source code and all configuration and script files into the target system's directory structure. To accomplish this execute the script

extract_cd11

Refer to paragraphs 4.0 and 4.1 of [SAI01] for details of this process.

5.0 Build

Building the software of the public bundle will compile all source code, create archive libraries and link executables. To accomplish this execute the script

build_cd11

build_cd11 should be executed only after a successful execution of the script *extract_cd11*. A significant amount of output is produced by this process. Redirect script output to a file so that the file may be reviewed for verification that no errors were encountered during execution. Refer to paragraphs 4.2 and 4.3 of [SAI01] for details of this process.

6.0 Installing Binaries and Configuration

Configuration files, scripts, and executable binaries need to be installed into an execution environment. To perform this installation execute the script

install_cd11

A successful execution of the script *build_cd11* is necessary prior to executing *install_cd11*. Refer to paragraph 4.3 of [SAI01] for details of this process.

7.0 Program Configuration

Configuration of CD-1.1 programs is necessary in order to have the software support the user's environment and needs. A script is provided to produce basic configuration modifications necessary to participate in a CD-1.1 protocol session. To perform this configuration execute the script

create_station

after having successfully executed *install_cd11*. This script requires information about the site and sensors being configured. Successful execution of this script must take place before attempting configuration of the environment or support programs. Refer to paragraphs 5.2 and 5.4 - 5.6 of [SAI01] for details of this process.

8.0 Environment Configuration

An execution environment must be established for software provided in this bundle to operate. The execution environment includes a logging directory and directories and files of the frame store. Successful execution of the *create_station* script must occur prior to executing the setup script. Processing will utilize definitions provided by that script, and in fact the script itself is created by *create_station*. Environment configuration is provided by the script

*setup_*<name>*_env*

where <name> will be replaced by user input. Refer to paragraphs 5.1 and 5.2 of [SAI01] for details of this process.

9.0 Test Program Configuration

A test program is provided in the bundle to produce synthetic data and data frames. This data frame generator (*dfg*) may be used to verify the operational environment and demonstrate operation of operational software components. Configuration for this program is provided by the script

configure_dfg

Successful execution of the create_station script must occur prior to attempting this script. Refer to paragraph 3.4.6 of [SAI01] for information about the *dfg*.

10.0 Execution

After the above scripts have been successfully executed the software of the bundle will be available for use. In the directory `...<your-execution-root>/bin` is the script

start_cd11

This script will start the Connection Originator and Multiplexer processes. See paragraph 4.4.1 of [SAI01] for additional information about controlling programs. Prior coordination will be required with the protocol peer (data center/consumer) so that the peer recognizes your location as a valid CD-1.1 data provider. If the peer has been configured for your location this script will establish a CD-1.1 connection. It is recommended that first attempts at connection occur with authentication processing turned off on both sides of the connection (see co_auth.par file). This will significantly reduce the number of possible failure modes and enable concentration on pure connectivity problems.

Starting the *dfg* will begin creation of synthetic frames representing data from your sensors. In the directory `...<your-execution-root>/utils/dfg` is the script

start_dfg

Executing this script will run the *dfg*(s) and populate the frame store. Depending on the configuration specified the multiplexer will operate on these frames and make them available for transmission. If a connection has been established with a protocol peer these frames will be sent.

In the directory `...<your-execution-root>/utils/dfg` is the script

kill_dfg

This script will terminate *dfg* processes started with the *start_dfg* script. In order for this script to operate correctly it must be executed in the same shell as that used to run *start_dfg*.

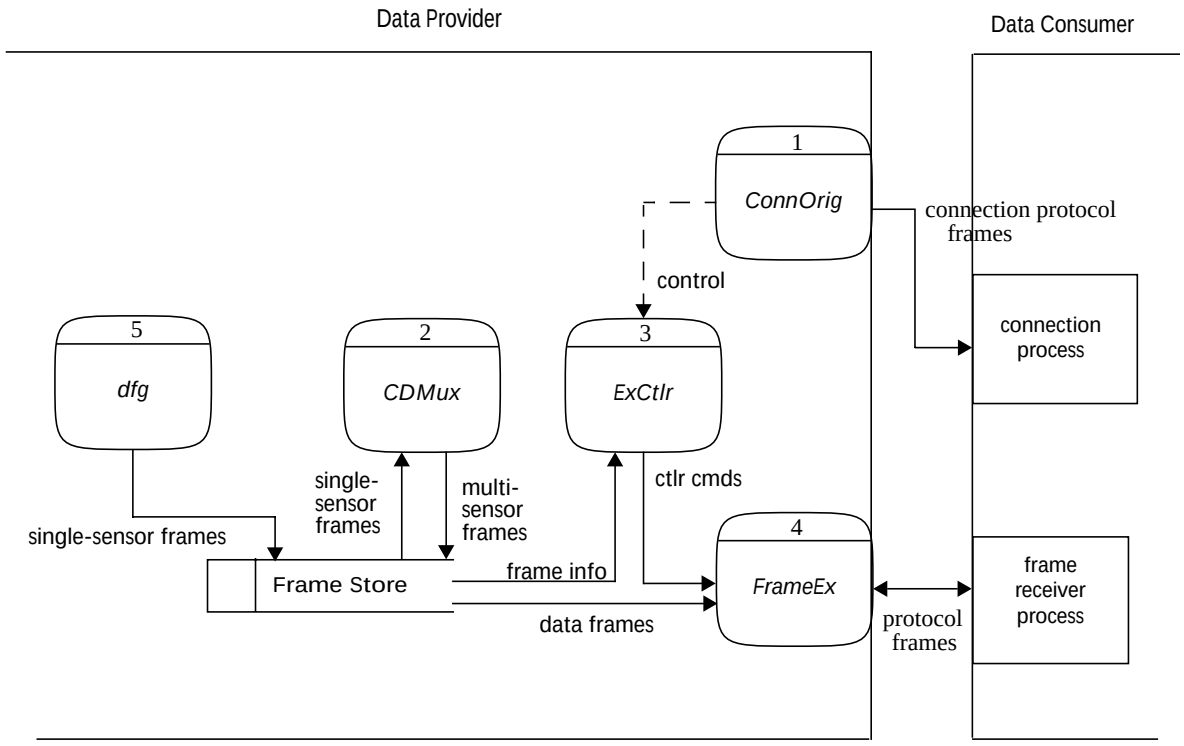

Figure 1. Resulting Subsystem

11.0 Doing More

The provided scripts provide basic configuration of CD-1.1 software and required operational environment. For some circumstances it may be necessary to modify the system's configuration to enhance its performance. In particular, the configuration of the frame store may warrant further attention to more accurately reflect the provider's data sources. Refer to the table on frame store attributes in paragraph 5.2 of [SAI01] for additional information. Additional work will also be

necessary to populate the frame store with actual data frames from the sensors, rather than synthetic frames created by the data frame generator.

12.0 References

[SAI01] Science Applications International Corporation, Public Software Bundle for Continuous Data 1.1 (CD-1.1) Description and Installation Instructions, SAIC-01/3064 2001.